

## **REMARKS**

This Amendment is in response to the Final Office Action dated May 21, 2010. Applicant respectfully requests reconsideration and allowance of all pending claims in view of the above-amendments and the following remarks.

### **I. TELEPHONE INTERVIEW**

Applicant would like to thank the Examiner for the courtesies extended during a telephone interview held on July 20, 2010 with Applicant's attorney, David Brush.

The interview included a discussion of the above-amendments and whether Eilts discloses correction of both phase and amplitude, or calculating an amplitude and phase vector for each reference pilot, for example. No agreement was reached.

### **II. CLAIM AMENDMENTS**

The amendments to the claims correspond to those presented to the Examiner as proposed amendments discussed during the telephone interview. Applicant believes these amendments do not raise significant new issues and respectfully requests that these amendments be entered to place the claims in condition for allowance or better form for appeal.

### **III. CLAIM REJECTIONS – 35 USC § 102**

Claims 15-19, 21-25 and 27-28 were rejected under 35 U.S.C. 102(b) as being allegedly anticipated by Eilts et al., U.S. Publication No. 2003/0108127.

#### **A. Examiner's Position**

During the telephone interview, the Examiner pointed to paragraph [0011] of Eilts, which mentions that,

"The demodulation of the tones requires information relating to the wireless channel magnitude and phase at each tone. The effects of the dispersion caused by the channel needs to be compensated prior to decoding of the signal, so that decoding errors can be minimized. A channel estimator 20 is provided to determine the amount of phase rotation and magnitude perturbation applied to the tones by the channel. Since the training tones are transmitted with known

magnitude and phase, the channel response at the training tones is easily determined."

and that,

"After correcting for any transmitted magnitude and phase differences, the channel estimator 20 ..."

The Examiner believes this reads on Applicant's claim 1, "independently correcting the said reference pilot in phase and amplitude as a function of the first estimate to output a corrected pilot."

Applicant respectfully disagrees with the Examiner's position.

## B. Applicant's Position

Independent claim 15 is amended to clarify the steps are performed for "each symbol".

**Eilts** does not disclose or suggest a correction step of the reference pilots in phase **and** amplitude, for each symbol. Indeed, this document concerns only **phase noise**.

The part of this document cited by the Examiner in the Office Action (page 3, paragraphs 42 and 43) only describes an estimation of the phase difference between the current channel impulse response and the average impulse response (after the IFFT), in order to correct his phase error. No amplitude correction for each reference pilot (for each symbol) is disclosed nor suggested in this document.

On the contrary, paragraphs 42 and 43 in **Eilts** clearly disclose a phase correction of the pilots, without any amplitude correction : « *To estimate the difference in phase between ... the estimate of the phase difference ... the average impulse response is the phase corrected by ... »*.

Moreover, the amplitude modification/reduction of the "edge tone" in **Eilts** does not correspond to the correction step of the reference pilots in phase **and** amplitude.

Indeed, the amplitude reduction of the "edge tone" concerns only one pilot, and not "all reference pilots".

Moreover, the case of this "edge tone" is specific, as this tone is transmitted at reduced

amplitude (this is well known). So this specific case cannot be extended to all the pilots, which are not transmitted at reduced amplitude.

Concerning paragraph 11 in **Eilts**, (paragraph cited by the Examiner during the interview), it does not disclose or suggest the steps of the amended claim 15.

Indeed, only one estimation is performed in this paragraph.

Moreover, the expression "*After correcting for any transmitted magnitude and phase differences*" is too broadly interpreted by the Examiner, as corresponding to the step of "*independently correcting the said reference pilot, in phase and amplitude*".

Indeed, **Eilts** does not disclose or suggest a step of "*calculating an amplitude and phase error vector for each of said reference pilots*".

Figure 3, and notably block 41, only discloses the extraction of pilots, from the set of carriers, but does not disclose or suggest a step of "*calculating an amplitude and phase error vector for each of said reference pilots*".

This characteristic claim 15 does not appear in any of the embodiments of **Eilts**.

Thus, the amended claim 15 (and similarly claims 27 and 28) is novel and non-obvious in view of **Eilts**.

#### IV. CLAIM REJECTIONS – 35 USC § 103

##### A. **Claim 20**

Claim 20 was rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over **Eltis** et al., U.S. Publication No. 2003/0108127, and further in view of **Zhang**, U.S. Publication No. 2003/0112265.

Claim 20 of the present application discloses that "pilots with an amplitude less than a first predetermined minimum average threshold and/or greater than a second predetermined maximum average threshold are rejected" and are not taken into account for "the calculation step for an amplitude and phase error vector".

**Zhang**, especially the part cited by the Examiner (paragraph 113, page 7), describes Fig. 10, which represents an energy function graph of the captured audio data, on which the energy

level of the audio waveform for both noise and speech appear. This paragraph discloses that noise is rejected by the speech detection process, if it exceeds a minimum energy threshold 136.

**Zhang** does not disclose or suggest comparison of the amplitude of the pilots themselves to a threshold, but only discloses an embodiment where the audio waveform is compared to a threshold.

Moreover, as explained before, as claim 15 is not anticipated by **Eilts**, the combination of **Eilts** and **Zhang** is not relevant, and the claim 20 is novel and inventive.

Finally, combining these two documents is not obvious, as **Zhang** does not concern the domain of OFDM transmission.

#### B. **Claim 26**

Claim 26 is rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over **Eilts** et al., U.S. Publication No. 2003/0108127 in further view of **Fujii** et al., European Patent No. 1,542,384.

Claim 26 of the present application discloses that the process of claim 15 is used “for correction of at least one phase and/or amplitude error common to two cells in a same OFDM type symbol”.

**Fujii**, especially the part cited by the Examiner (page 7, lines 1-7), describes the possible presence of interferences coming from other OFDM cells, for example in OFDM-CDMA transmission, said interferences influencing the signal and getting more difficult a precise phase error detection.

This document does not disclose or suggest a phase error detection common to two cells, but only points out the presence of interferences between many cells.

Moreover, as explained before, as claim 15 is not anticipated by **Eilts**, the combination of **Eilts** and **Fujii** is not relevant and claim 26 is novel and non-obvious.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

WESTMAN, CHAMPLIN & KELLY, P.A.

By: David D. Brush

---

David D. Brush, Reg. No. 34,557  
900 Second Avenue South, Suite 1400  
Minneapolis, Minnesota 55402-3319

Phone: (612) 334-3222 Fax: (612) 334-3312

DDB:dmm